Remarks

Claims 1-26 are now pending in this application. Claims 1-23 are rejected. Claims 24-26 have been newly added. No new matter has been added.

In accordance with 37 C.F.R. 1.136(a), a three-month extension of time is submitted herewith to extend the due date of the response to the Office Action dated June 4, 2003 for the above-identified patent application from September 4, 2003 through and including December 4, 2003. In accordance with 37 C.F.R. 1.17(a)(3), authorization to charge a deposit account in the amount of $950.00 to cover this extension of time request also is submitted herewith. In addition, an authorization to charge the deposit account for the newly added claims has been submitted herewith.

The rejection of Claims 1-6, and 9-12 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. (US Patent No. 5,182,483) in view of Berger (US Patent No. 5,637,943) is respectfully traversed.

Hibino et al. describe a squirrel-cage rotor comprising a rotor core formed by laminating a plurality of steel sheets each having in the outer circumference thereof a number of slot-forming punched portions (column 2, lines 36-41). For example, each punched portion (2) of each steel sheet (1) includes a main portion (2a) and an additional portion (2b) extended from the main portion toward the outer circumference of the rotor and inclined in the direction of either one of two sides of the rotor relative to the position of the main portion such that each punched portion has an unsymmetrical configuration (column 2, lines 41-48). The rotor core is composed of a plurality of units of the steel sheets C_A and C_B formed (column 2, lines 48-50). In each unit, the additional portions are inclined in the same direction (column 2, lines 51-52). The main portions of both units are piled one upon another and the inclination of the additional portions of one unit is opposite to that of the other unit (column 2, lines 52-55).

Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, where the groove cross section includes noses that extend into ideally-deemed groove cross sections, and bulges extend from the ideally-deemed groove cross sections (column 1, lines 15-25).

Claim 1 recites a rotor comprising "a plurality of rotor laminations, each set of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, wherein at least one of said notches is occupied by a metal."

Neither Hibino et al. nor Berger, considered alone or in combination, describe or suggest a rotor including a plurality of rotor laminations, each set of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations including a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions, where at least one of the notches is occupied by a metal.

Specifically, neither Hibino et al. nor Berger, considered alone or in combination, describe or suggest a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions, where at least one of the notches is occupied by a metal. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, and Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino et al. in view of Berger.

Claims 2-6, and 9-12 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-6, and 9-12 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-6, and 9-12 likewise are patentable over Hibino et al. in view of Berger.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-6, and 9-12 be withdrawn.

The rejection of Claims 7 and 8 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. in view of Berger as applied to Claims 1-6 and 9-12 and in further view of Pielok (US Patent No. 6,369,686) is respectfully traversed.

Hibino et al. and Berger are described above.

Pielok describes that a rotor (1) has a primary winding wire (2) and a stator (4) a secondary winding wire (5): these constitute a transformer (column 1, lines 23-26). The primary winding wire, and secondary winding wire, are wound on a core plate package (6) (column 1, lines 26-30). Winding openings (8) with winding spaces (7) for the primary winding wire are arranged on the core plate package of the rotor in the outer core plate area, and winding openings (10) with secondary winding spaces (9) for the winding wire core arranged in the inner core plate area on the core plate package of the stator (column 1, lines 30-35).

Claims 7 and 8 depend on Claim 1 which recites a rotor comprising "a plurality of rotor laminations, each set of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, wherein at least one of said notches is occupied by a metal."

None of Hibino et al., Berger, or Pielok, considered alone or in combination, describe or suggest a rotor including a plurality of rotor laminations, each set of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations including a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions, where at least one of the notches is occupied by a metal.

Specifically, none of Hibino et al., Berger, or Pielok, considered alone or in combination, describe or suggest a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the

skew portions, where at least one of the notches is occupied by a metal. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, and Pielok describes that winding openings with winding spaces for the primary winding wire are arranged on the core plate package of the rotor. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino et al. in view of Berger and Pielok.

When the recitations of Claims 7 and 8 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 7 and 8 likewise are patentable over Hibino et al. in view of Berger and Pielok.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 7-8 be withdrawn.

The rejection of Claim 13 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. in view of Berger as applied to Claims 1-6 and 9-12 and in further view of Pryjmak (US Patent No. 4,616,151) is respectfully traversed.

Hibino et al. and Berger are described above.

Pryjmak describes an armature that is to be used in a standard cylindrical case (40) having permanent field magnets (42) affixed therein (column 2, lines 18-20). Armature core (10) includes a plurality of iron laminations (9) which are stacked on an armature shaft to form poles (12) separated by slots (13) (column 2, lines 20-24).

Claim 13 depends on Claim 1 which recites a rotor comprising "a plurality of rotor laminations, each set of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, wherein at least one of said notches is occupied by a metal."

None of Hibino et al., Berger, or Pryjmak, considered alone or in combination, describe or suggest a rotor including a plurality of rotor laminations, each set of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations including a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions, where at least one of the notches is occupied by a metal.

Specifically, none of Hibino et al., Berger, or Pryjmak, considered alone or in combination, describe or suggest a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of the skew portions, where at least one of the notches is occupied by a metal. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, and Pryjmak describes an armature core that includes a plurality of iron laminations which are stacked on the armature shaft to form poles separated by slots. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Hibino et al. in view of Berger and Pryjmak.

When the recitations of Claim 13 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claim 13 likewise are patentable over Hibino et al. in view of Berger and Pryjmak.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 13 be withdrawn.

The rejection of Claims 14-17, and 19-23 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. in view of Berger as applied to Claims 1-6, and 9-12, and further in view of Uchida (US Patent No. 5,010,266) is respectfully traversed.

Hibino et al. and Berger are described above.

Uchida describes a rotor with a structure having an exact angular difference between two groups, for example, 2.5 degrees (column 3, lines 10-13). One group of unitary rotor

elements consists of one unitary rotor element (34a), and the other group of unitary rotor elements consists of the other unitary rotor element (34b) (column 3, lines 13-16). Each of the unitary rotor elements may be formed by a plurality of unitary rotor elements, and each unitary rotor element of the two groups may be alternately arranged (column 3, lines 17-20). Each unitary rotor element is formed by the same unitary rotor element, and the unitary rotor element (34a) includes a permanent magnet element (38a), called permanent magnet, and a laminated rotor core element (36a) held by the permanent magnets (column 3, lines 21-26).

Claim 14 recites a rotor for an electric motor, the rotor comprising "a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one said skew portions, and a central rotor shaft opening, wherein at least one of said notches is occupied by a metal and remaining of said notches are occupied by at least one permanent magnet; a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through said central rotor shaft opening; and a plurality of secondary conductors extending through said slots."

None of Hibino et al., Berger, or Uchida, considered alone or in combination, describe nor suggest a rotor for an electric motor, the rotor including a rotor core including a plurality of rotor laminations, each of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations including a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one the skew portions, and a central rotor shaft opening, where at least one of the notches is occupied by a metal and remaining of the notches are occupied by at least one permanent magnet, a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through the central rotor shaft opening, and a plurality of secondary conductors extending through the slots.

Specifically, none of Hibino et al., Berger, or Uchida, considered alone or in combination, describe or suggest a plurality of notches having an open end at the outer

periphery and substantially aligned radially and coextensive radially with at least one the skew portions, and a central rotor shaft opening, where at least one of the notches is occupied by a metal and remaining of the notches are occupied by at least one permanent magnet. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, and Uchida describes that the unitary rotor element includes a permanent magnet element. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Hibino et al. in view of Berger and Uchida.

Claims 15-17, and 19-20 depend from independent Claim 14. When the recitations of Claims 15-17, and 19-20 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claims 15-17, and 19-20 likewise are patentable over Hibino et al. in view of Berger and Uchida.

Claim 21 recites an electric motor, comprising "a stator comprising a stator core, first and second main windings, said first main winding configured to form a lower number of poles than said second main winding, said stator core forming a stator bore; and a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, a plurality of secondary conductors extending through said slots, wherein at least one of said notches are occupied by a metal and remaining of said notches are occupied by at least one permanent magnet, wherein the at least one permanent magnet is magnetized to form a number of poles equal to the number of poles formed by said second main winding."

None of Hibino, Berger, or Uchida, considered alone or in combination, describe or suggest an electric motor, including a stator including a stator core, first and second main windings, the first main winding configured to form a lower number of poles than the second main winding, the stator core forming a stator bore, and a rotor core including a plurality of rotor laminations, each of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a

second set of rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, a plurality of secondary conductors extending through said slots, where at least one of the notches are occupied by a metal and remaining of the notches are occupied by at least one permanent magnet, where the at least one permanent magnet is magnetized to form a number of poles equal to the number of poles formed by said second main winding.

Specifically, none of Hibino et al., Berger, or Uchida, considered alone or in combination, describe or suggest a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one of said skew portions, a plurality of secondary conductors extending through said slots, where at least one of the notches are occupied by a metal and remaining of the notches are occupied by at least one permanent magnet, where the at least one permanent magnet is magnetized to form a number of poles equal to the number of poles formed by said second main winding. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, and Uchida describes that the unitary rotor element includes a permanent magnet element. For at least the reasons set forth above, Claim 21 is submitted to be patentable over Hibino et al. in view of Berger and Uchida.

Claims 22-23 depend from independent Claim 21. When the recitations of Claims 22-23 are considered in combination with the recitations of Claim 21, Applicants submit that dependent Claims 22-23 likewise are patentable over Hibino et al. in view of Berger and Uchida.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 14-17, and 19-23 be withdrawn.

The rejection of Claim 18 under 35 U.S.C. § 103 as being unpatentable over Hibino et al. in view of Berger, further in view of Uchida as applied to Claims 14-17, and 19-23, and further in view of Pielok is respectfully traversed.

Hibino, Berger, Uchida, and Pielok are described above.

Claim 18 depends on Claim 14 which recites a rotor for an electric motor, the rotor comprising "a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery and substantially aligned radially and coextensive radially with at least one said skew portions, and a central rotor shaft opening, wherein at least one of said notches is occupied by a metal and remaining of said notches are occupied by at least one permanent magnet; a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through said central rotor shaft opening; and a plurality of secondary conductors extending through said slots."

None of Hibino et al., Berger, Uchida or Pielok, considered alone or in combination, describe or suggest a rotor for an electric motor, the rotor including a rotor core including a plurality of rotor laminations, each of the laminations having an outer periphery, a first set of rotor laminations including a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations including a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one the skew portions, and a central rotor shaft opening, where at least one of the notches is occupied by a metal and remaining of the notches are occupied by at least one permanent magnet, a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through the central rotor shaft opening, and a plurality of secondary conductors extending through the slots.

Specifically, none of Hibino et al., Berger, Uchida or Pielok, considered alone or in combination, describe or suggest a plurality of notches having an open end at the outer periphery and substantially aligned radially and coextensive radially with at least one the skew portions, and a central rotor shaft opening, where at least one of the notches is occupied by a metal and remaining of the notches are occupied by at least one permanent magnet. Rather, Hibino et al. describe that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material, Berger describes a squirrel-cage rotor having closed grooves extending along the circumference of the rotor, Uchida describes that the unitary rotor element includes a

permanent magnet element, and Pielok describes that winding openings with winding spaces for the primary winding wire are arranged on the core plate package of the rotor. For at least the reasons set forth above, Claim 14 is submitted to be patentable over Hibino et al., in view of Berger, further in view of Uchida , and further in view of Pielok.

When the recitations of Claim 18 are considered in combination with the recitations of Claim 14, Applicants submit that dependent Claim 18 likewise is patentable over Hibino et al., in view of Berger, further in view of Uchida , and further in view of Pielok.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claim 18 be withdrawn.

Moreover, Applicant respectfully submits that it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejections are based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Hibino et al. teaches that each punched portion of each steel sheet includes a main portion, where the main portions are piled upon one another without being filled with a material. Berger teaches a squirrel-cage rotor having closed grooves extending along the circumference of the rotor. Uchida teaches that the unitary rotor element includes a permanent magnet element. Pielok teaches that winding openings with winding spaces for the primary winding wire are arranged on the core plate package of the rotor. Pryjmak teaches an armature core that includes a plurality of iron laminations which are stacked on the armature shaft to form poles separated by slots. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejections appear to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such combinations are impermissible, and for this reason alone, Applicant requests that the Section 103 rejections of Claims 1-6 and 9-12, Claims 7 and 8, Claim 13, Claims 14-17 and 19-23, and Claim 18 be withdrawn.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejections of Claims 1-6 and 9-12, Claims 7 and 8, Claim 13, Claims 14-17 and 19-23, and Claim 18 be withdrawn.

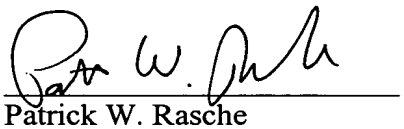
Newly added Claim 24 depends from independent Claim 1, which is submitted to be in condition for allowance and patentable over the cited art. For at least the reasons set forth above, Applicants respectfully submit that Claim 24 is also patentable over the cited art.

Newly added Claim 25 depends from independent Claim 14, which is submitted to be in condition for allowance and patentable over the cited art. For at least the reasons set forth above, Applicants respectfully submit that Claim 25 is also patentable over the cited art.

Newly added Claim 26 depends from independent Claim 21, which is submitted to be in condition for allowance and patentable over the cited art. For at least the reasons set forth above, Applicants respectfully submit that Claim 26 is also patentable over the cited art.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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